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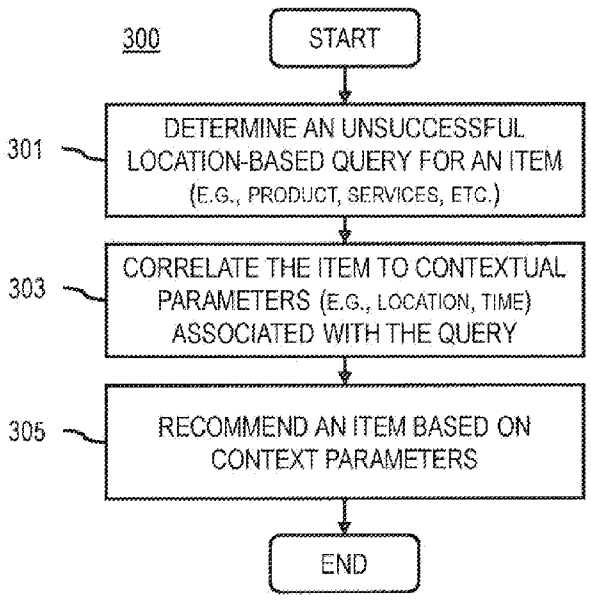
FIG. 3



(57) Abstract: An approach is provided for determining business potential information based on unsuccessful location-based queries. A business potential mapping service platform determines that one or more location-based queries for one or more items are unsuccessful. The business potential mapping service platform then processes and/or facilitates a processing of the one or more location-based queries, metadata associated with the one or more location-based queries, or a combination thereof to cause, at least in part, at least one correlation of the one or more items to one or more contextual parameters associated with the one or more location-based queries.

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METHOD AND APPARATUS FOR COLLECTING AND SHARING BUSINESS POTENTIAL INFORMATION BASED ON LOCATION-BASED QUERIES

BACKGROUND

[0001] Service providers (e.g., wireless, cellular, etc.) and device manufacturers are continually challenged to deliver value and convenience to consumers by, for example, providing compelling network services. One area of development has been the integration of location detection technologies (e.g., GPS, network based, etc.) and data search providers (e.g., GOOGLE MAPS, MAPQUEST, BING MAPS, YAHOO! MAPS, etc.) to enable, for example, an identification or mapping of nearby goods, services, infrastructure, and the like. For example, a user device (e.g., cellular device) may detected a GPS location and query a data search provider to identify a digital service (e.g., a WiFi hotspot) near the user device. However, even with the availability of associated location information and data search providers, their use with respect to mapping goods and services has generally been limited to identifying existing or established goods and services. For example, users of traditional systems wishing to provide goods and/or services previously unavailable at a certain location may typically determine only that such goods and/or services are currently unavailable at the certain location. Accordingly, service providers and device manufacturers face significant challenges to enabling a use of location information and data search providers to support a providing of goods and/or services previously unavailable at a location.

SOME EXAMPLE EMBODIMENTS

[0002] Therefore, there is a need for an approach for determining business potential information based on unsuccessful location-based queries.

[0003] According to one embodiment, a method comprises determining that one or more location-based queries for one or more items are unsuccessful. The method also comprises processing and/or facilitating a processing of the one or more location-based queries, metadata associated with the one or more location-based queries, or a combination thereof to cause, at least in part, at least one correlation of the one or more items to one or more contextual parameters associated with the one or more location-based queries.

[0004] According to another embodiment, an apparatus comprises at least one processor, and at least one memory including computer program code for one or more

computer programs, the at least one memory and the computer program code configured to, with the at least one processor, cause, at least in part, the apparatus to determine that one or more location-based queries for one or more items are unsuccessful. The apparatus is also caused to process and/or facilitate a processing of the one or more location-based queries, metadata associated with the one or more location-based queries, or a combination thereof to cause, at least in part, at least one correlation of the one or more items to one or more contextual parameters associated with the one or more location-based queries.

[0005] According to another embodiment, a computer-readable storage medium carries one or more sequences of one or more instructions which, when executed by one or more processors, cause, at least in part, an apparatus to determine that one or more location-based queries for one or more items are unsuccessful. The apparatus is also caused to process and/or facilitate a processing of the one or more location-based queries, metadata associated with the one or more location-based queries, or a combination thereof to cause, at least in part, at least one correlation of the one or more items to one or more contextual parameters associated with the one or more location-based queries.

[0006] According to another embodiment, an apparatus comprises means for determining that one or more location-based queries for one or more items are unsuccessful. The apparatus also comprises means for processing and/or facilitating a processing of the one or more location-based queries, metadata associated with the one or more location-based queries, or a combination thereof to cause, at least in part, at least one correlation of the one or more items to one or more contextual parameters associated with the one or more location-based queries.

[0007] In addition, for various example embodiments of the invention, the following is applicable: a method comprising facilitating a processing of and/or processing (1) data and/or (2) information and/or (3) at least one signal, the (1) data and/or (2) information and/or (3) at least one signal based, at least in part, on (or derived at least in part from) any one or any combination of methods (or processes) disclosed in this application as relevant to any embodiment of the invention.

[0008] For various example embodiments of the invention, the following is also applicable: a method comprising facilitating access to at least one interface configured to allow access to at least one service, the at least one service configured to perform any one

or any combination of network or service provider methods (or processes) disclosed in this application.

[0009] For various example embodiments of the invention, the following is also applicable: a method comprising facilitating creating and/or facilitating modifying (1) at least one device user interface element and/or (2) at least one device user interface functionality, the (1) at least one device user interface element and/or (2) at least one device user interface functionality based, at least in part, on data and/or information resulting from one or any combination of methods or processes disclosed in this application as relevant to any embodiment of the invention, and/or at least one signal resulting from one or any combination of methods (or processes) disclosed in this application as relevant to any embodiment of the invention.

[0010] For various example embodiments of the invention, the following is also applicable: a method comprising creating and/or modifying (1) at least one device user interface element and/or (2) at least one device user interface functionality, the (1) at least one device user interface element and/or (2) at least one device user interface functionality based at least in part on data and/or information resulting from one or any combination of methods (or processes) disclosed in this application as relevant to any embodiment of the invention, and/or at least one signal resulting from one or any combination of methods (or processes) disclosed in this application as relevant to any embodiment of the invention.

[0011] In various example embodiments, the methods (or processes) can be accomplished on the service provider side or on the mobile device side or in any shared way between service provider and mobile device with actions being performed on both sides.

[0012] For various example embodiments, the following is applicable: An apparatus comprising means for performing the method of any of originally filed claims 1-20.

[0013] Still other aspects, features, and advantages of the invention are readily apparent from the following detailed description, simply by illustrating a number of particular embodiments and implementations, including the best mode contemplated for carrying out the invention. The invention is also capable of other and different embodiments, and its several details can be modified in various obvious respects, all without departing from the spirit and scope of the invention. Accordingly, the drawings and description are to be regarded as illustrative in nature, and not as restrictive.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The embodiments of the invention are illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings:

[0015] FIG. 1 is a diagram of a system capable of determining business potential information based on unsuccessful location-based queries, according to one embodiment;

[0016] FIG. 2 is a diagram of the components of a business potential mapping service platform, according to one embodiment;

[0017] FIG. 3 is a flowchart of a process for determining business potential information based on unsuccessful location-based queries, according to one embodiment;

[0018] FIGs. 4A-4C are diagrams of user interfaces utilized in the processes of FIG. 3, according to various embodiments;

[0019] FIG. 5 is a diagram of hardware that can be used to implement an embodiment of the invention;

[0020] FIG. 6 is a diagram of a chip set that can be used to implement an embodiment of the invention; and

[0021] FIG. 7 is a diagram of a mobile terminal (e.g., handset) that can be used to implement an embodiment of the invention.

DESCRIPTION OF SOME EMBODIMENTS

[0022] Examples of a method, apparatus, and computer program for determining business potential information based on unsuccessful location-based queries are disclosed. In the following description, for the purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the embodiments of the invention. It is apparent, however, to one skilled in the art that the embodiments of the invention may be practiced without these specific details or with an equivalent arrangement. In other instances, well-known structures and devices are shown in block diagram form in order to avoid unnecessarily obscuring the embodiments of the invention.

[0023] As used herein, the term "item" refers digital service, physical services, goods, real property, and the like. Digital services include any data connection to a network (e.g., a local area connection, a cellular network, a satellite network, a mobile ad-hoc network,

etc.) using various technologies such as BLUETOOTH, WIFI, WIMAX, NEAR-FIELD COMMUNICATION, GLOBAL SYSTEM FOR MOBILE COMMUNICATION, LONG TERM EVOLUTION, and the like. In one embodiment, it is contemplated that item locations can be real-world locations or virtual locations (e.g., in a virtual world such as a gaming world or other virtual reality simulation). Physical services include intangible commodities, for example, consulting, customer service, human resources, childcare, cleaning, repair, maintenance, construction, medical care, legal services, education, financial services, foodservice, personal grooming, information services (e.g., data processing, translation, etc.), transportation, public utility (e.g., providing electric power, gas, water, etc.).

[0024] FIG. 1 is a diagram of a system capable of determining business potential information based on unsuccessful location-based queries, according to one embodiment. Traditionally, searches or queries for an unavailable item often times indicate little or no additional information regarding the unavailable or potential item. As a result, business planning may be limited to information relating to whether or not an item is already provided at a location.

[0025] To address this problem, a system 100 of FIG. 1 introduces the capability to determine unsuccessful search attempts and process unsuccessful search attempts in order to identify business potential information such as, for example, a demand for an item, a time day an item is in demand, a characteristic of a user demanding an item, a specific locations where queries for a demand are generated, and the like. In this way, users no longer need to independently look for information about a consumer demand for an unavailable item. Instead, a user (or subscriber) may receive a recommendation based on potential business information generated by a processing of unsuccessful location-based queries and a request from the user indicating, for example, an item, contextual information (e.g., a time, location, a topic), profile information (e.g., an age, a gender, etc.), and the like.

[0026] The system 100 may build on the availability of location and data search providers (e.g., GOOGLE MAPS, MAPQUEST, etc.) and, in one embodiment, introduces the capability to overlay or map business potential information. The term "business potential information" refers to information relating to a business objective, a public service objective, a city planning objective, and the like. Moreover, business planning information

may be displayed or presented by a rank lists (e.g., a highest business potential first), topic (e.g., financial, medical, retail, restaurant, etc.), type (e.g., goods, services, real property, etc.), and the like.

[0027] As shown in FIG. 1, the system 100 comprises a user equipment (UE) 101 having connectivity to business potential mapping service platform 103 via a communication network 105. In one embodiment, UE 101 may detect a physical location of the UE 101 (e.g., UE 101a) or another UE 101 (e.g., UE 101n) using a location module 107. Additionally, or alternatively, the platform 103 may determine an unsuccessful query result (e.g., no or too few results) from data search provider 109 (e.g., GOOGLE MAPS, MAPQUEST, BING MAPS, YAHOO! MAPS, etc.) and store the search parameters (e.g., an item and an associated location) in log 111. In this manner, the platform 103 may access information stored in the log 111 (or UE 101) to facilitate a determination of business potential information. For example, in response to a request from UE 101a containing a certain item (e.g., coffee shop) at a certain location, the platform 103 may access log 111 to determine business potential information (e.g., a number of unsuccessful queries) for the item at that location for the request.

[0028] In one embodiment, the system 100 comprises a service platform 113, the services 115a-115n (also collectively referred to as services 115) of the service platform 113, and data search provider 109. By way of example, the service platform 113, the services 115, and the data search provider 109 may include or otherwise support services (e.g., navigation, mapping, routing, etc.) that provide a current state of a location including the existence of items, infrastructure (e.g., roads, trains, bus routes, etc.), public buildings (e.g., a court house, a library, a city hall, etc.), parks, and the like.

[0029] By way of example, the communication network 105 of system 100 includes one or more networks such as a data network, a wireless network, a telephony network, or any combination thereof. It is contemplated that the data network may be any local area network (LAN), metropolitan area network (MAN), wide area network (WAN), a public data network (e.g., the Internet), short range wireless network (e.g., BLUETOOTH, WIFI, WIMAX, near-field communication (NFC), etc.), or any other suitable packet-switched network, such as a commercially owned, proprietary packet-switched network, e.g., a proprietary cable or fiber-optic network, and the like, or any combination thereof. In

addition, the wireless network may be, for example, a cellular network and may employ various technologies including enhanced data rates for global evolution (EDGE), general packet radio service (GPRS), global system for mobile communications (GSM), Internet protocol multimedia subsystem (IMS), universal mobile telecommunications system (UMTS), etc., as well as any other suitable wireless medium, e.g., worldwide interoperability for microwave access (WiMAX), Long Term Evolution (LTE) networks, code division multiple access (CDMA), wideband code division multiple access (WCDMA), wireless fidelity (WiFi), wireless LAN (WLAN), Bluetooth®, Internet Protocol (IP) data casting, satellite, mobile ad-hoc network (MANET), and the like, or any combination thereof.

[0030] The UE 101 is any type of mobile terminal, fixed terminal, or portable terminal including a mobile handset, station, unit, device, multimedia computer, multimedia tablet, Internet node, communicator, desktop computer, laptop computer, notebook computer, netbook computer, tablet computer, personal communication system (PCS) device, personal navigation device, personal digital assistants (PDAs), audio/video player, digital camera/camcorder, positioning device, television receiver, radio broadcast receiver, electronic book device, game device, or any combination thereof, including the accessories and peripherals of these devices, or any combination thereof. It is also contemplated that the UE 101 can support any type of interface to the user (such as "wearable" circuitry, etc.).

[0031] By way of example, the UE 101, the platform 103, the data search provider 109, and the service platform 113 communicate with each other and other components of the communication network 105 using well known, new or still developing protocols. In this context, a protocol includes a set of rules defining how the network nodes within the communication network 105 interact with each other based on information sent over the communication links. The protocols are effective at different layers of operation within each node, from generating and receiving physical signals of various types, to selecting a link for transferring those signals, to the format of information indicated by those signals, to identifying which software application executing on a computer system sends or receives the information. The conceptually different layers of protocols for exchanging information over a network are described in the Open Systems Interconnection (OSI) Reference Model.

[0032] Communications between the network nodes are typically effected by exchanging discrete packets of data. Each packet typically comprises (1) header information associated with a particular protocol, and (2) payload information that follows the header information and contains information that may be processed independently of that particular protocol. In some protocols, the packet includes (3) trailer information following the payload and indicating the end of the payload information. The header includes information such as the source of the packet, its destination, the length of the payload, and other properties used by the protocol. Often, the data in the payload for the particular protocol includes a header and payload for a different protocol associated with a different, higher layer of the OSI Reference Model. The header for a particular protocol typically indicates a type for the next protocol contained in its payload. The higher layer protocol is said to be encapsulated in the lower layer protocol. The headers included in a packet traversing multiple heterogeneous networks, such as the Internet, typically include a physical (layer 1) header, a data-link (layer 2) header, an internetwork (layer 3) header and a transport (layer 4) header, and various application (layer 5, layer 6 and layer 7) headers as defined by the OSI Reference Model.

[0033] FIG. 2 is a diagram of the components of the business potential mapping service platform 103, according to one embodiment. By way of example, the platform 103 includes one or more components for providing business potential information based on unsuccessful location-based queries. It is contemplated that the functions of these components may be combined in one or more components or performed by other components of equivalent functionality. In this embodiment, the platform 103 includes a control logic 201, an unsuccessful query module 203, a query metadata module 205, a business potential data manager 207, a business potential search module 209, and a communication interface 211.

[0034] The control logic 201 oversees tasks, including tasks performed by the unsuccessful query module 203, query metadata module 205, business potential data manager 207, business potential search module 209, and communication interface 211. For example, although the other modules may perform the actual task, the control logic 201 may determine when and how those tasks are performed or otherwise direct the other modules to perform the task.

[0035] The unsuccessful query module 203 determines unsuccessful queries relating to items. The unsuccessful query module 203 may work with the communication interface 211 to determine results from, for example, data search provider 109 (e.g., a query search), UE 101 (e.g., a search for a data or service connection), or service platform 113 (e.g., a query search, service request, etc.). For example, the unsuccessful query module 203 may determine an unsuccessful query for a GSM connection based on, the UE 101 attempting to establish a GSM connection, a result from data search provider 109 indicating that a GSM connection is unavailable, a result from service platform 113 indicating that a GSM connection is unavailable, or a combination thereof. In one embodiment, the unsuccessful query module 203 may determine an unsuccessful query based on an input into UE 101. For example, the unsuccessful query module 203 determines unsuccessful queries based on a user input into a user interface presented by UE 101 requesting whether or not a search for an item was successful. In another example, the unsuccessful query module 203 determines unsuccessful queries based on an input selecting an item from one or more items determined by, for example, the data search provider 109, to be unavailable. It is contemplated that the unsuccessful query module 203 may ignore unsuccessful queries results and/or limit an initiating of a user input based on profile information (or registration) of the user associated with, for example, the platform 103, UE 101, service platform 113, data search provider 109, and the like.

[0036] In an exemplary embodiment, the unsuccessful query module 203 monitors results from search queries (e.g., a request to identify locations of an item within an area) to identify unsuccessful results. A search query may be determined to be unsuccessful based on a number of results matching or satisfying the search query. By way of example, the unsuccessful query module 203 may determine a result to be unsuccessful because in response for a request indicating a bookstore in a particular city, data search provider 109 indicates no bookstores. In another example, a query to identify a coffee shop within a particular city that results in an indication that an identified number of coffee shops within the particular city are below a predefined threshold indicated by the search query, in the example embodiment, is determined to be unsuccessful. It is contemplated that the unsuccessful query module 203 may determine whether or not a result to a search query is unsuccessful based on one or more parameters (e.g., predefined thresholds) associated with

UE 101, platform 103, data search provider 109, business potential log 111, service platform 113, and the like.

[0037] In another exemplary embodiment the unsuccessful query module 203 monitors results from queries (e.g., a request to identify locations of an item within an area) to identify unsuccessful results based on a comparison of predefined criteria and results matching the query. By way of example, a query to identify any access to radio communication (e.g., CDMA, GSM, etc.) within a particular city that results in an indication that no access to radio communications meeting a predefined signal strength threshold are within the particular city, in the example embodiment, may be determined to be unsuccessful by the unsuccessful query module 203. In another example, a query to identify any automated teller machine (ATM) in a particular town that results in an indication that no ATM is within a predefined distance threshold from UE 101a, in the example embodiment, may be determined by the unsuccessful query module 203 to be unsuccessful.

[0038] In an exemplary embodiment the unsuccessful query module 203 may determine a query to be unsuccessful based on predefined criteria relating to, for example, a type of search query (e.g., a service, a good, etc.), metadata associated with the query (e.g., a location, a time, etc.), profile information (e.g., a gender, an age, etc.), and the like. For example, the unsuccessful query module 203, in response to determining that query results indicate an ATM and an automobile mechanic at a same distance from UE 101a, may nonetheless determine the query for the ATM to be unsuccessful and the query for the auto mechanic to be successful due to a predefined distance threshold associated with the ATM being shorter than a predefined distance threshold associated with the automobile mechanic. In another example, metadata associated with a query indicates a certain time of day and although query results indicate items within a predefined distance, the unsuccessful query module 203 determines the query to be unsuccessful based on an indication that all the items in the query result are closed at the certain time of day. In yet another example, profile information indicates a user is underage, and although query results indicate items within a predefined distance, the unsuccessful query module 203 determines the query to be unsuccessful based on an indication that all the items in the query result refuse service to underage patrons (e.g., a dram shop).

[0039] In another embodiment the unsuccessful query module 203 determines predefined criteria used to identify unsuccessful results based on a request to business potential search module 209 indicating a predefined criteria or threshold. For example, in response to a business potential search for grocery stores of at least a certain retail floor space, the unsuccessful query module 203 determines results containing only grocery stores with less than the certain retail floor space to be unsuccessful.

[0040] In another embodiment the unsuccessful query module 203 determines predefined criteria used to identify unsuccessful results based on one or more conditions detected by, for example, UE 101, service platform 113, and the like. For example, in response to the location module 107a determining that a user associated with UE 101a is walking, the unsuccessful query module 203 may determine that a result indicating only items exceeding a predefined distance parameter associated with walking is unsuccessful. In another example, the unsuccessful query module 203 may determine that a result indicating no items associated with a particular service (e.g., service 115a) is unsuccessful. It is contemplated that predefined criteria used by the unsuccessful query module 203 may be associated with UE 101, platform 103, data search provider 109, business potential log 111, service platform 113, and the like.

[0041] The query metadata module 205 manages and controls information associated with a search query. The query metadata module 205 may work with a communication interface 211 to determine an unsuccessful query target location from the unsuccessful query module 203, determine information associated with the search query (e.g., metadata), and transmit associated information to the business potential data manager 207. In one embodiment, the query metadata module 205 determines metadata indicating search parameters such as a location, a time, a keyword (e.g., pizza), a mode of transportation (walking, driving, bicycling, public transportation, etc.), a range of rating (e.g., at least three stars), a price range, and the like. Search parameters may be associated with UE 101, platform 103, data search provider 109, business potential log 111, service platform 113, and the like. For example, a user may indicate in profile information that only items with at least a three star customer rating be included in a result to queries by the user. It is contemplated that search parameters may cause the platform 103 to ignore an unsatisfactory

result, for example, if a search parameters require a high quality service (e.g., five star hotel) and a low maximum price.

[0042] In another embodiment, the query metadata module 205 determines metadata based on a user input initiated by a presentation of a user interface. That is, the query metadata module 205 may cause the UE 101 to present a user interface requesting metadata related to an unsuccessful query or search. For example, in response to an unsuccessful query for a coffee UE 101 presents a user interface initiating a user input indicating how often the user drinks coffee, what brands of coffee the user prefers, and the like. In another example, in response to an unsuccessful query for a book store or a magazine shop UE 101 presents a user interface initiating a user input indicating an item (e.g., book or magazine), a type of item (e.g., reading material), and the like.

[0043] Additionally, or alternatively, query metadata module 205 may determine metadata based on profile information indicating, for example, an age, a gender, a job industry, an education level, a geographical location (e.g., a specific metro area, city, state, etc.), a type of geographical location (rural, suburban, urban, etc.), an income range, and the like. It is contemplated that profile information may be associated with a user, or may be anonymized (e.g., disassociated from a user and aggregated with other users).

[0044] Once information associated with an unsuccessful query has been determined by the query metadata module 205, the business potential data manager 207 may process the information and store the information in log 111. In one embodiment, the business potential data manager 207 categorizes information associated with unsuccessful queries by correlating (e.g., indexing) the queries with contextual parameters such as, for example, a time (e.g., a time of day, a day in a week, a time of year, etc.), a topic, and the like. Topics may include, for example, an item type such as (e.g., a digital item, a physical item, a good, a service, a real property, etc.), an item (e.g., bookstore, WiFi access, salon, apartment complex, etc.), and the like. Additionally, or alternatively, the business potential data manager 207 may categorize information associated with unsuccessful queries by correlating (e.g., indexing) the queries with profile information (e.g., an age range, an income range, a job industry, etc.).

[0045] The business potential search module 209 may work with the business potential data manager 207 to determine business potential information. In one embodiment, a user

(or subscriber) of the platform 103 requests the business potential search module 209 to determine business potential information based on parameters selected by the user. For example, in response to a user's indication of a digital service for providing a wireless local area network connection (W-lan), the business potential search module 209 may indicate a location associated with the highest number of unsuccessful W-lan searches, followed by a second location associated with a second highest number of unsuccessful W-lan searches, and so forth. Additionally, or alternatively, users (or subscribers) may indicate contextual parameters relating to, for example, metadata associated with a search query (e.g., five star user rating, a time of day, etc.), profile information (e.g., income range, age, gender, etc.), and the like. For example, in response to a request for business potential information indicating an age range and a specific city, the business potential search module 209 may recommend or indicate a location and item in the city associated with the highest number of unsuccessful queries by users within the age range, followed by a second location and item associated with a second highest number of unsuccessful queries by users within the age range, and so forth.

[0046] The communication interface 211 manages and controls any incoming and outgoing communication such as an indication of a user selection, a geographical location, a status of user equipment, and the like. The communication interface 211 can also manage other communications of the UE 101 such as Internet communications. For example, as discussed above, the unsuccessful query module 203 may retrieve query information from the data search provider 109, via the communication interface 211, in order to determine an unsuccessful query. Additionally, communication interface 211 may transmit a request to UE 101 specifying an item associated with contextual parameters. The communication interface 211 can also cause UE 101 to actively prompt other devices to initiate a user input indicating an item for a location. For example, the communication interface 211 may cause UE 101a to prompt a message indicating "which services should be found in this location?" and cause the business potential data manager 207 to store or categorize an input by a user along with an associated location, metadata, and profile information.

[0047] FIG. 3 is a flowchart of a process for providing business potential information based on unsuccessful location-based queries, according to one embodiment. In one embodiment, the platform 103 performs the process 300 and is implemented in, for instance, a chip set including a processor and a memory as shown in FIG. 6. In step 301, the

unsuccessful query module 203 determines an unsuccessful location-based query for an item. In one example, the unsuccessful query module 203 determines a query for a bus stop at 1:00 A.M. is unsuccessful because one or more parameters associated with the platform 103 require at least five successful matches and results from the data search provider 109 (e.g., MAPQUEST) indicate that five bus stops are within a predefined distance (e.g., a quarter mile for a bus stop item search), but only two of the bus stops are servicing busses at 1:00 A.M. In another example, the unsuccessful query module 203 determines a query for a UE 101 data connection near UE 101a with at least a specified data rate is unsuccessful because UE 101a indicates a walking mode of transportation and results from the service platform 113 (e.g., a signal strength search service) indicate that the specified data rates are beyond a predefined distance threshold from the current location of UE 101a for the walking mode of transportation. Once an unsuccessful location-based query is determined, the business potential data manager 207 correlates, as in step 303, the item to contextual parameters associated with the query. In one embodiment, the business potential data manager 207 increments a counter associated with an item and contextual parameters associated with a query. For example, in response to an unsuccessful query for a café in a city, the business potential data manager 207 increments a counter indicating a café in the city. In another embodiment, the business potential data manager 207 generates an entry into log 111 indicating an item, contextual parameters associated with the item, and profile information associated with the item. For example, in response to an unsuccessful query for a library at 10 P.M. in a county from a user, the business potential data manager 207 generates a field in log 111 indicating the library, the county, the time of the request (e.g., 1 P.M.), and profile information (e.g., an age, gender, etc.) associated with the user. Once the item is correlated to contextual parameters (and metadata and/or profile information), the business potential search module 209 recommends, as in step 305, an item based on contextual parameters. In one example, a public service employee for a county subscribes to the services of the platform 103, requests a search for a recommendation relating to library services in the county with an indication of an age range (e.g., school age), and the business potential search module 209 recommends a location for library services within the county based on unsuccessful queries associated with profile information indicating an age within the age range. In another example, a businesswoman wishing to invest in her hometown, requests a search for a recommendation of an item within her hometown and the

business potential search module 209 causes UE 101a to display a rank of items based on a frequency of unsuccessful queries corresponding to each item, and allows the businesswoman to browse anonymized profile information associated with the unsuccessful queries. In yet another example, a service provider (e.g., service 113a) wishing to create an access point (e.g., WiFi, GMS, LTE, etc.) at a location with the most demand, requests a search for a recommendation of a location for the access point and the business potential search module 209 causes UE 101a to display a map indicating or recommending locations that UE 101 have indicated lack connectivity to access points, along with a corresponding value indicating a level of demand (e..g., a rank, a frequency of unsuccessful queries, a total number of queries, etc.) based on unsuccessful queries.

[0048] FIGs. 4A-4C are diagrams of user interfaces utilized in the processes of FIG. 3, according to various embodiments. Fig. 4A illustrates a UE 401 (e.g., UE 101a) presenting a user interface with an information window 403 indicating a user, selectable options 405 that when selected allow editing to displayed information, a selected box 407 indicating to share information, and an unselected box 409 indicating to not share information. In the exemplary embodiment, a user may select options 405 in order to edit information being shared when search queries are unsuccessful, for example, to modify an age, gender, geolocation, income range, and the like. Additionally, the exemplary embodiment includes boxes 407 and 409 that allow a user to indicate whether or not to share the information corresponding (e.g., positioned next to) to the boxes 407 and 409.

[0049] Fig. 4B illustrates a UE 401 (e.g., UE 101a) presenting a user interface with selectable options 411 and 413 that when selected display additional information. In the exemplary embodiment, a user may select option 411 to cause UE 401 to display an information window 415 indicating an item (e.g., bus stop) and map 417. In the exemplary embodiment, the map 417 includes a small indicator 419 indicating, for example, a small number of unsuccessful location-based queries associated with that location, and a large indicator 421 indicating, for example, a large number of unsuccessful location-based queries associated with that location. Similarly, a user may select option 413 to cause UE 401 to display an information window 433 indicating an item (e.g., WiFi hotspot) and map 435. In the exemplary embodiment, the map 435 includes a star indicator 437 indicating, for example, a highest rank based on a number of unsuccessful location-based queries associated with that location, a triangle indicator 439 indicating, for example, a moderate

rank based on a number of unsuccessful location-based queries associated with that location, and a circle indicator 441 indicating, for example, a low rank based on a number of unsuccessful location-based queries associated with that location. As illustrated, indicators, for example indicators 437-441 may display a value representing a number of unsuccessful location-based queries associated with that location, for example, a ranking of the indicated location compared to other locations.

[0050] Fig. 4C illustrates a UE 401 (e.g., UE 101a) presenting a user interface with selectable options 443 and 445 that when selected display additional information. Selectable options 443 display an indication of an item (e.g., book store, auto repair, etc.), and a corresponding value representing a number of unsuccessful location-based queries for the item, for example, a total number of unsuccessful location-based queries. In the exemplary embodiment, a user may select option 443 to cause UE 401 to display an information window 447 indicating an item (e.g., Cafe) and a map 449. In the exemplary embodiment, the map 449 includes an indicator 451 indicating, for example, a recommended location for the item displayed in information window 447 based on location-based queries associated with that location. Similarly, a user may select option 445 to cause UE 401 to display an information window 453 indicating an item (e.g., automobile repair) and map 455. In the exemplary embodiment, the map 455 includes an indicator 457 indicating a recommended location for the item displayed in information window 453 based on location-based queries associated with that location, a star indicator 459 indicating, for example, a recommended location based on metadata associated with a number of unsuccessful location-based queries, and a triangle indicator 461 indicating, for example, a recommended location based on profiles information associated with a number of unsuccessful location-based queries. As illustrated, options, for example, selectable options 443 and 445 may display a value representing a number of unsuccessful location-based queries associated with that location that corresponds to an item displayed on the option. For example, selectable option 443 may indicate an item (e.g., book store) and a frequency of unsuccessful location-based queries (e.g., a number of unsuccessful location-based queries per week).

[0051] The processes described herein for determining business potential information based on unsuccessful location-based queries may be advantageously implemented via software, hardware, firmware or a combination of software and/or firmware and/or

hardware. For example, the processes described herein, may be advantageously implemented via processor(s), Digital Signal Processing (DSP) chip, an Application Specific Integrated Circuit (ASIC), Field Programmable Gate Arrays (FPGAs), etc. Such exemplary hardware for performing the described functions is detailed below.

[0052] FIG. 5 illustrates a computer system 500 upon which an embodiment of the invention may be implemented. Although computer system 500 is depicted with respect to a particular device or equipment, it is contemplated that other devices or equipment (e.g., network elements, servers, etc.) within FIG. 5 can deploy the illustrated hardware and components of system 500. Computer system 500 is programmed (e.g., via computer program code or instructions) to determine business potential information based on unsuccessful location-based queries as described herein and includes a communication mechanism such as a bus 510 for passing information between other internal and external components of the computer system 500. Information (also called data) is represented as a physical expression of a measurable phenomenon, typically electric voltages, but including, in other embodiments, such phenomena as magnetic, electromagnetic, pressure, chemical, biological, molecular, atomic, sub-atomic and quantum interactions. For example, north and south magnetic fields, or a zero and non-zero electric voltage, represent two states (0, 1) of a binary digit (bit). Other phenomena can represent digits of a higher base. A superposition of multiple simultaneous quantum states before measurement represents a quantum bit (qubit). A sequence of one or more digits constitutes digital data that is used to represent a number or code for a character. In some embodiments, information called analog data is represented by a near continuum of measurable values within a particular range. Computer system 500, or a portion thereof, constitutes a means for performing one or more steps of determining business potential information based on unsuccessful location-based queries.

[0053] A bus 510 includes one or more parallel conductors of information so that information is transferred quickly among devices coupled to the bus 510. One or more processors 502 for processing information are coupled with the bus 510.

[0054] A processor (or multiple processors) 502 performs a set of operations on information as specified by computer program code related to determining business potential information based on unsuccessful location-based queries. The computer program

code is a set of instructions or statements providing instructions for the operation of the processor and/or the computer system to perform specified functions. The code, for example, may be written in a computer programming language that is compiled into a native instruction set of the processor. The code may also be written directly using the native instruction set (e.g., machine language). The set of operations include bringing information in from the bus 510 and placing information on the bus 510. The set of operations also typically include comparing two or more units of information, shifting positions of units of information, and combining two or more units of information, such as by addition or multiplication or logical operations like OR, exclusive OR (XOR), and AND. Each operation of the set of operations that can be performed by the processor is represented to the processor by information called instructions, such as an operation code of one or more digits. A sequence of operations to be executed by the processor 502, such as a sequence of operation codes, constitute processor instructions, also called computer system instructions or, simply, computer instructions. Processors may be implemented as mechanical, electrical, magnetic, optical, chemical, or quantum components, among others, alone or in combination.

[0055] Computer system 500 also includes a memory 504 coupled to bus 510. The memory 504, such as a random access memory (RAM) or any other dynamic storage device, stores information including processor instructions for determining business potential information based on unsuccessful location-based queries. Dynamic memory allows information stored therein to be changed by the computer system 500. RAM allows a unit of information stored at a location called a memory address to be stored and retrieved independently of information at neighboring addresses. The memory 504 is also used by the processor 502 to store temporary values during execution of processor instructions. The computer system 500 also includes a read only memory (ROM) 506 or any other static storage device coupled to the bus 510 for storing static information, including instructions, that is not changed by the computer system 500. Some memory is composed of volatile storage that loses the information stored thereon when power is lost. Also coupled to bus 510 is a non-volatile (persistent) storage device 508, such as a magnetic disk, optical disk or flash card, for storing information, including instructions, that persists even when the computer system 500 is turned off or otherwise loses power.

[0056] Information, including instructions for determining business potential information based on unsuccessful location-based queries, is provided to the bus 510 for use by the processor from an external input device 512, such as a keyboard containing alphanumeric keys operated by a human user, a microphone, an Infrared (IR) remote control, a joystick, a game pad, a stylus pen, a touch screen, or a sensor. A sensor detects conditions in its vicinity and transforms those detections into physical expression compatible with the measurable phenomenon used to represent information in computer system 500. Other external devices coupled to bus 510, used primarily for interacting with humans, include a display device 514, such as a cathode ray tube (CRT), a liquid crystal display (LCD), a light emitting diode (LED) display, an organic LED (OLED) display, a plasma screen, or a printer for presenting text or images, and a pointing device 516, such as a mouse, a trackball, cursor direction keys, or a motion sensor, for controlling a position of a small cursor image presented on the display 514 and issuing commands associated with graphical elements presented on the display 514. In some embodiments, for example, in embodiments in which the computer system 500 performs all functions automatically without human input, one or more of external input device 512, display device 514 and pointing device 516 is omitted.

[0057] In the illustrated embodiment, special purpose hardware, such as an application specific integrated circuit (ASIC) 520, is coupled to bus 510. The special purpose hardware is configured to perform operations not performed by processor 502 quickly enough for special purposes. Examples of ASICs include graphics accelerator cards for generating images for display 514, cryptographic boards for encrypting and decrypting messages sent over a network, speech recognition, and interfaces to special external devices, such as robotic arms and medical scanning equipment that repeatedly perform some complex sequence of operations that are more efficiently implemented in hardware.

[0058] Computer system 500 also includes one or more instances of a communications interface 570 coupled to bus 510. Communication interface 570 provides a one-way or two-way communication coupling to a variety of external devices that operate with their own processors, such as printers, scanners and external disks. In general the coupling is with a network link 578 that is connected to a local network 580 to which a variety of external devices with their own processors are connected. For example, communication interface 570 may be a parallel port or a serial port or a universal serial bus (USB) port on a

personal computer. In some embodiments, communications interface 570 is an integrated services digital network (ISDN) card or a digital subscriber line (DSL) card or a telephone modem that provides an information communication connection to a corresponding type of telephone line. In some embodiments, a communication interface 570 is a cable modem that converts signals on bus 510 into signals for a communication connection over a coaxial cable or into optical signals for a communication connection over a fiber optic cable. As another example, communications interface 570 may be a local area network (LAN) card to provide a data communication connection to a compatible LAN, such as Ethernet. Wireless links may also be implemented. For wireless links, the communications interface 570 sends or receives or both sends and receives electrical, acoustic or electromagnetic signals, including infrared and optical signals, that carry information streams, such as digital data. For example, in wireless handheld devices, such as mobile telephones like cell phones, the communications interface 570 includes a radio band electromagnetic transmitter and receiver called a radio transceiver. In certain embodiments, the communications interface 570 enables connection to the communication network 105 for determining business potential information based on unsuccessful location-based queries to the UE 101.

[0059] The term "computer-readable medium" as used herein refers to any medium that participates in providing information to processor 502, including instructions for execution. Such a medium may take many forms, including, but not limited to computer-readable storage medium (e.g., non-volatile media, volatile media), and transmission media. Non-transitory media, such as non-volatile media, include, for example, optical or magnetic disks, such as storage device 508. Volatile media include, for example, dynamic memory 504. Transmission media include, for example, twisted pair cables, coaxial cables, copper wire, fiber optic cables, and carrier waves that travel through space without wires or cables, such as acoustic waves and electromagnetic waves, including radio, optical and infrared waves. Signals include man-made transient variations in amplitude, frequency, phase, polarization or other physical properties transmitted through the transmission media. Common forms of computer-readable media include, for example, a floppy disk, a flexible disk, hard disk, magnetic tape, any other magnetic medium, a CD-ROM, CDRW, DVD, any other optical medium, punch cards, paper tape, optical mark sheets, any other physical medium with patterns of holes or other optically recognizable indicia, a RAM, a PROM, an EPROM, a FLASH-EPROM, an EEPROM, a flash memory, any other memory chip or

cartridge, a carrier wave, or any other medium from which a computer can read. The term computer-readable storage medium is used herein to refer to any computer-readable medium except transmission media.

[0060] Logic encoded in one or more tangible media includes one or both of processor instructions on a computer-readable storage media and special purpose hardware, such as ASIC 520.

[0061] Network link 578 typically provides information communication using transmission media through one or more networks to other devices that use or process the information. For example, network link 578 may provide a connection through local network 580 to a host computer 582 or to equipment 584 operated by an Internet Service Provider (ISP). ISP equipment 584 in turn provides data communication services through the public, world-wide packet-switching communication network of networks now commonly referred to as the Internet 590.

[0062] A computer called a server host 592 connected to the Internet hosts a process that provides a service in response to information received over the Internet. For example, server host 592 hosts a process that provides information representing video data for presentation at display 514. It is contemplated that the components of system 500 can be deployed in various configurations within other computer systems, e.g., host 582 and server 592.

[0063] At least some embodiments of the invention are related to the use of computer system 500 for implementing some or all of the techniques described herein. According to one embodiment of the invention, those techniques are performed by computer system 500 in response to processor 502 executing one or more sequences of one or more processor instructions contained in memory 504. Such instructions, also called computer instructions, software and program code, may be read into memory 504 from another computer-readable medium such as storage device 508 or network link 578. Execution of the sequences of instructions contained in memory 504 causes processor 502 to perform one or more of the method steps described herein. In alternative embodiments, hardware, such as ASIC 520, may be used in place of or in combination with software to implement the invention. Thus, embodiments of the invention are not limited to any specific combination of hardware and software, unless otherwise explicitly stated herein.

[0064] The signals transmitted over network link 578 and other networks through communications interface 570, carry information to and from computer system 500. Computer system 500 can send and receive information, including program code, through the networks 580, 590 among others, through network link 578 and communications interface 570. In an example using the Internet 590, a server host 592 transmits program code for a particular application, requested by a message sent from computer 500, through Internet 590, ISP equipment 584, local network 580 and communications interface 570. The received code may be executed by processor 502 as it is received, or may be stored in memory 504 or in storage device 508 or any other non-volatile storage for later execution, or both. In this manner, computer system 500 may obtain application program code in the form of signals on a carrier wave.

[0065] Various forms of computer readable media may be involved in carrying one or more sequence of instructions or data or both to processor 502 for execution. For example, instructions and data may initially be carried on a magnetic disk of a remote computer such as host 582. The remote computer loads the instructions and data into its dynamic memory and sends the instructions and data over a telephone line using a modem. A modem local to the computer system 500 receives the instructions and data on a telephone line and uses an infra-red transmitter to convert the instructions and data to a signal on an infra-red carrier wave serving as the network link 578. An infrared detector serving as communications interface 570 receives the instructions and data carried in the infrared signal and places information representing the instructions and data onto bus 510. Bus 510 carries the information to memory 504 from which processor 502 retrieves and executes the instructions using some of the data sent with the instructions. The instructions and data received in memory 504 may optionally be stored on storage device 508, either before or after execution by the processor 502.

[0066] FIG. 6 illustrates a chip set or chip 600 upon which an embodiment of the invention may be implemented. Chip set 600 is programmed to determine business potential information based on unsuccessful location-based queries as described herein and includes, for instance, the processor and memory components described with respect to FIG. 5 incorporated in one or more physical packages (e.g., chips). By way of example, a physical package includes an arrangement of one or more materials, components, and/or wires on a structural assembly (e.g., a baseboard) to provide one or more characteristics such as

physical strength, conservation of size, and/or limitation of electrical interaction. It is contemplated that in certain embodiments the chip set 600 can be implemented in a single chip. It is further contemplated that in certain embodiments the chip set or chip 600 can be implemented as a single "system on a chip." It is further contemplated that in certain embodiments a separate ASIC would not be used, for example, and that all relevant functions as disclosed herein would be performed by a processor or processors. Chip set or chip 600, or a portion thereof, constitutes a means for performing one or more steps of providing user interface navigation information associated with the availability of functions. Chip set or chip 600, or a portion thereof, constitutes a means for performing one or more steps of determining business potential information based on unsuccessful location-based queries.

[0067] In one embodiment, the chip set or chip 600 includes a communication mechanism such as a bus 601 for passing information among the components of the chip set 600. A processor 603 has connectivity to the bus 601 to execute instructions and process information stored in, for example, a memory 605. The processor 603 may include one or more processing cores with each core configured to perform independently. A multi-core processor enables multiprocessing within a single physical package. Examples of a multi-core processor include two, four, eight, or greater numbers of processing cores. Alternatively or in addition, the processor 603 may include one or more microprocessors configured in tandem via the bus 601 to enable independent execution of instructions, pipelining, and multithreading. The processor 603 may also be accompanied with one or more specialized components to perform certain processing functions and tasks such as one or more digital signal processors (DSP) 607, or one or more application-specific integrated circuits (ASIC) 609. A DSP 607 typically is configured to process real-world signals (e.g., sound) in real time independently of the processor 603. Similarly, an ASIC 609 can be configured to performed specialized functions not easily performed by a more general purpose processor. Other specialized components to aid in performing the inventive functions described herein may include one or more field programmable gate arrays (FPGA), one or more controllers, or one or more other special-purpose computer chips.

[0068] In one embodiment, the chip set or chip 600 includes merely one or more processors and some software and/or firmware supporting and/or relating to and/or for the one or more processors.

[0069] The processor 603 and accompanying components have connectivity to the memory 605 via the bus 601. The memory 605 includes both dynamic memory (e.g., RAM, magnetic disk, writable optical disk, etc.) and static memory (e.g., ROM, CD-ROM, etc.) for storing executable instructions that when executed perform the inventive steps described herein to determine business potential information based on unsuccessful location-based queries. The memory 605 also stores the data associated with or generated by the execution of the inventive steps.

[0070] FIG. 7 is a diagram of exemplary components of a mobile terminal (e.g., handset) for communications, which is capable of operating in the system of FIG. 1, according to one embodiment. In some embodiments, mobile terminal 701, or a portion thereof, constitutes a means for performing one or more steps of determining business potential information based on unsuccessful location-based queries. Generally, a radio receiver is often defined in terms of front-end and back-end characteristics. The front-end of the receiver encompasses all of the Radio Frequency (RF) circuitry whereas the back-end encompasses all of the base-band processing circuitry. As used in this application, the term "circuitry" refers to both: (1) hardware-only implementations (such as implementations in only analog and/or digital circuitry), and (2) to combinations of circuitry and software (and/or firmware) (such as, if applicable to the particular context, to a combination of processor(s), including digital signal processor(s), software, and memory(ies) that work together to cause an apparatus, such as a mobile phone or server, to perform various functions). This definition of "circuitry" applies to all uses of this term in this application, including in any claims. As a further example, as used in this application and if applicable to the particular context, the term "circuitry" would also cover an implementation of merely a processor (or multiple processors) and its (or their) accompanying software/or firmware. The term "circuitry" would also cover if applicable to the particular context, for example, a baseband integrated circuit or applications processor integrated circuit in a mobile phone or a similar integrated circuit in a cellular network device or other network devices.

[0071] Pertinent internal components of the telephone include a Main Control Unit (MCU) 703, a Digital Signal Processor (DSP) 705, and a receiver/transmitter unit including a microphone gain control unit and a speaker gain control unit. A main display unit 707 provides a display to the user in support of various applications and mobile terminal functions that perform or support the steps of determining business potential information based on unsuccessful location-based queries. The display 707 includes display circuitry configured to display at least a portion of a user interface of the mobile terminal (e.g., mobile telephone). Additionally, the display 707 and display circuitry are configured to facilitate user control of at least some functions of the mobile terminal. An audio function circuitry 709 includes a microphone 711 and microphone amplifier that amplifies the speech signal output from the microphone 711. The amplified speech signal output from the microphone 711 is fed to a coder/decoder (CODEC) 713.

[0072] A radio section 715 amplifies power and converts frequency in order to communicate with a base station, which is included in a mobile communication system, via antenna 717. The power amplifier (PA) 719 and the transmitter/modulation circuitry are operationally responsive to the MCU 703, with an output from the PA 719 coupled to the duplexer 721 or circulator or antenna switch, as known in the art. The PA 719 also couples to a battery interface and power control unit 720.

[0073] In use, a user of mobile terminal 701 speaks into the microphone 711 and his or her voice along with any detected background noise is converted into an analog voltage. The analog voltage is then converted into a digital signal through the Analog to Digital Converter (ADC) 723. The control unit 703 routes the digital signal into the DSP 705 for processing therein, such as speech encoding, channel encoding, encrypting, and interleaving. In one embodiment, the processed voice signals are encoded, by units not separately shown, using a cellular transmission protocol such as enhanced data rates for global evolution (EDGE), general packet radio service (GPRS), global system for mobile communications (GSM), Internet protocol multimedia subsystem (IMS), universal mobile telecommunications system (UMTS), etc., as well as any other suitable wireless medium, e.g., microwave access (WiMAX), Long Term Evolution (LTE) networks, code division multiple access (CDMA), wideband code division multiple access (WCDMA), wireless fidelity (WiFi), satellite, and the like, or any combination thereof.

[0074] The encoded signals are then routed to an equalizer 725 for compensation of any frequency-dependent impairments that occur during transmission though the air such as phase and amplitude distortion. After equalizing the bit stream, the modulator 727 combines the signal with a RF signal generated in the RF interface 729. The modulator 727 generates a sine wave by way of frequency or phase modulation. In order to prepare the signal for transmission, an up-converter 731 combines the sine wave output from the modulator 727 with another sine wave generated by a synthesizer 733 to achieve the desired frequency of transmission. The signal is then sent through a PA 719 to increase the signal to an appropriate power level. In practical systems, the PA 719 acts as a variable gain amplifier whose gain is controlled by the DSP 705 from information received from a network base station. The signal is then filtered within the duplexer 721 and optionally sent to an antenna coupler 735 to match impedances to provide maximum power transfer. Finally, the signal is transmitted via antenna 717 to a local base station. An automatic gain control (AGC) can be supplied to control the gain of the final stages of the receiver. The signals may be forwarded from there to a remote telephone which may be another cellular telephone, any other mobile phone or a land-line connected to a Public Switched Telephone Network (PSTN), or other telephony networks.

[0075] Voice signals transmitted to the mobile terminal 701 are received via antenna 717 and immediately amplified by a low noise amplifier (LNA) 737. A down-converter 739 lowers the carrier frequency while the demodulator 741 strips away the RF leaving only a digital bit stream. The signal then goes through the equalizer 725 and is processed by the DSP 705. A Digital to Analog Converter (DAC) 743 converts the signal and the resulting output is transmitted to the user through the speaker 745, all under control of a Main Control Unit (MCU) 703 which can be implemented as a Central Processing Unit (CPU).

[0076] The MCU 703 receives various signals including input signals from the keyboard 747. The keyboard 747 and/or the MCU 703 in combination with other user input components (e.g., the microphone 711) comprise a user interface circuitry for managing user input. The MCU 703 runs a user interface software to facilitate user control of at least some functions of the mobile terminal 701 to determine business potential information based on unsuccessful location-based queries. The MCU 703 also delivers a display command and a switch command to the display 707 and to the speech output switching controller, respectively. Further, the MCU 703 exchanges information with the DSP 705 and can

access an optionally incorporated SIM card 749 and a memory 751. In addition, the MCU 703 executes various control functions required of the terminal. The DSP 705 may, depending upon the implementation, perform any of a variety of conventional digital processing functions on the voice signals. Additionally, DSP 705 determines the background noise level of the local environment from the signals detected by microphone 711 and sets the gain of microphone 711 to a level selected to compensate for the natural tendency of the user of the mobile terminal 701.

[0077] The CODEC 713 includes the ADC 723 and DAC 743. The memory 751 stores various data including call incoming tone data and is capable of storing other data including music data received via, e.g., the global Internet. The software module could reside in RAM memory, flash memory, registers, or any other form of writable storage medium known in the art. The memory device 751 may be, but not limited to, a single memory, CD, DVD, ROM, RAM, EEPROM, optical storage, magnetic disk storage, flash memory storage, or any other non-volatile storage medium capable of storing digital data.

[0078] An optionally incorporated SIM card 749 carries, for instance, important information, such as the cellular phone number, the carrier supplying service, subscription details, and security information. The SIM card 749 serves primarily to identify the mobile terminal 701 on a radio network. The card 749 also contains a memory for storing a personal telephone number registry, text messages, and user specific mobile terminal settings.

[0079] While the invention has been described in connection with a number of embodiments and implementations, the invention is not so limited but covers various obvious modifications and equivalent arrangements, which fall within the purview of the appended claims. Although features of the invention are expressed in certain combinations among the claims, it is contemplated that these features can be arranged in any combination and order.

CLAIMS

WHAT IS CLAIMED IS:

1. A method comprising:

determining that one or more location-based queries for one or more items are unsuccessful; and

processing and/or facilitating a processing of the one or more location-based queries, metadata associated with the one or more location-based queries, or a combination thereof to cause, at least in part, at least one correlation of the one or more items to one or more contextual parameters associated with the one or more location-based queries.

2. The method of claim 1, wherein the one or more contextual parameters include, at least in part, a location, a time, one or more topics, or a combination thereof.

3. The method according to any of claims 1 and 2, further comprising:

causing, at least in part, a rendering of a user interface depicting the at least one correlation, the one or more location-based queries, the metadata associated with the one or more location-based queries, the one or more items, or a combination thereof.

4. The method according to any of claims 1-3, further comprising:

causing, at least in part, an indexing, a storage, or a combination thereof of the at least one correlation in one or more data stores.

5. The method according to any of claims 1-4, further comprising:

processing and/or facilitating a processing of the at least one correlation to cause, at least in part, a generation of one or more recommendations regarding which of the one or more items, one or more other items, or a combination thereof to offer with respect to the one or more contextual parameters.

6. The method according to any of claims 1-5, further comprising:

causing, at least in part, a ranking of the one or more items based, at least in part, on a frequency of the one or more location-based queries that are unsuccessful.

7. The method according to any of claims 1-6, further comprising:

causing, at least in part, a transmission of at least one request to one or more user devices to specify which of the one or more items to associate with the one or more contextual parameters.

8. The method according to any of claims 1-7, further comprising:

determining profile information associated with at least one user, at least one user device, or a combination thereof that is initiating the one or more location-based queries; and

causing, at least in part, an association of the profile information with the at least one correlation, the one or more location-based queries, the metadata associated with the one or more location-based queries, the one or more items, or a combination thereof.

9. The method of claim 8, further comprising:

causing, at least in part, an anonymization of the profile information.

10. The method according to any of claims 1-9, wherein the one or more items include, at least in part, one or more digital items, one or more physical items, one or more services, one or more goods, one or more real properties, one or more infrastructure elements, or a combination thereof.

11. An apparatus comprising:

at least one processor; and

at least one memory including computer program code for one or more programs,

the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to perform at least the following,

determine that one or more location-based queries for one or more items are unsuccessful; and

process and/or facilitate a processing of the one or more location-based queries, metadata associated with the one or more location-based queries, or a combination thereof to cause, at least in part, at least one correlation of the one or more items to one or more contextual parameters associated with the one or more location-based queries.

12. The apparatus of claim 11, wherein the one or more contextual parameters include, at least in part, a location, a time, one or more topics, or a combination thereof.

13. The apparatus according to any of claims 11 and 12, wherein the apparatus is further caused to:

cause, at least in part, a rendering of a user interface depicting the at least one correlation, the one or more location-based queries, the metadata associated with the one or more location-based queries, the one or more items, or a combination thereof.

14. The apparatus according to any of claims 11-13, wherein the apparatus is further caused to:

cause, at least in part, an indexing, a storage, or a combination thereof of the at least one correlation in one or more data stores.

15. The apparatus according to any of claims 11-14, wherein the apparatus is further caused to:

process and/or facilitate a processing of the at least one correlation to cause, at least in part, a generation of one or more recommendations regarding which of the one or more items, one or more other items, or a combination thereof to offer with respect to the one or more contextual parameters.

16. The apparatus according to any of claims 11-15, wherein the apparatus is further caused to:

cause, at least in part, a ranking of the one or more items based, at least in part, on a frequency of the one or more location-based queries that are unsuccessful.

17. The apparatus according to any of claims 11-16, wherein the apparatus is further caused to:

cause, at least in part, a transmission of at least one request to one or more user devices to specify which of the one or more items to associate with the one or more contextual parameters.

18. The apparatus according to any of claims 11-17, wherein the apparatus is further caused to:

determine profile information associated with at least one user, at least one user device, or a combination thereof that is initiating the one or more location-based queries; and

cause, at least in part, an association of the profile information with the at least one correlation, the one or more location-based queries, the metadata associated with the one or more location-based queries, the one or more items, or a combination thereof.

19. The apparatus of claim 18, wherein the apparatus is further caused to:

causing, at least in part, an anonymization of the profile information.

20. The apparatus according to any of claims 11-19, wherein the one or more items include, at least in part, one or more digital items, one or more physical items, one or more services, one or more goods, one or more real properties, one or more infrastructure elements, or a combination thereof.

21. An apparatus according to any of claims11-20, wherein the apparatus is a mobile phone further comprising:

user interface circuitry and user interface software configured to facilitate user control of at least some functions of the mobile phone through use of a display and configured to respond to user input; and

a display and display circuitry configured to display at least a portion of a user interface of the mobile phone, the display and display circuitry configured to facilitate user control of at least some functions of the mobile phone.

22. A computer-readable storage medium carrying one or more sequences of one or more instructions which, when executed by one or more processors, cause an apparatus to perform at least a method of any of claims 1-10.

23. An apparatus comprising means for performing at least a method of any of claims 1-10.

24. An apparatus of claim 23, wherein the apparatus is a mobile phone further comprising:

user interface circuitry and user interface software configured to facilitate user control of at least some functions of the mobile phone through use of a display and configured to respond to user input; and

a display and display circuitry configured to display at least a portion of a user interface of the mobile phone, the display and display circuitry configured to facilitate user control of at least some functions of the mobile phone.

25. A computer program product including one or more sequences of one or more instructions which, when executed by one or more processors, cause an apparatus to at least perform at least a method of any of claims 1-10.

26. A method comprising facilitating access to at least one interface configured to allow access to at least one service, the at least one service configured to perform at least a method of any of claims 1-10.

27. A method comprising facilitating a processing of and/or processing (1) data and/or (2) information and/or (3) at least one signal, the (1) data and/or (2) information and/or (3) at least one signal based, at least in part, on at least a method of any of claims 1-10.

28. A method comprising facilitating creating and/or facilitating modifying (1) at least one device user interface element and/or (2) at least one device user interface functionality, the (1) at least one device user interface element and/or (2) at least one device user interface functionality based, at least in part, on at least a method of any of claims 1-10.

5

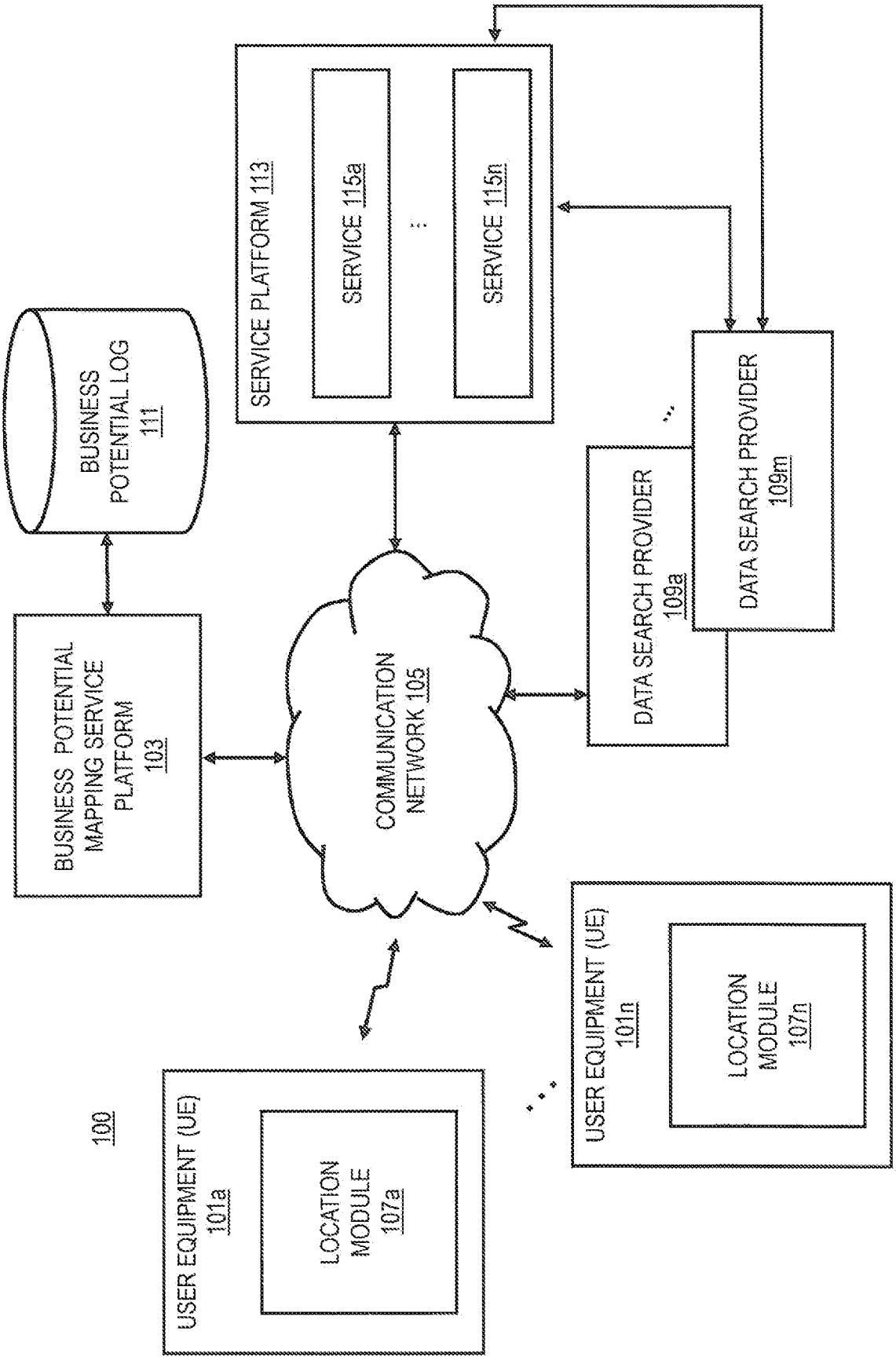

100
USER EQUIPMENT (UE) 101a
LOCATION MODULE 107a
USER EQUIPMENT (UE) 101n
LOCATION MODULE 107n
BUSINESS POTENTIAL MAPPING SERVICE PLATFORM 103
COMMUNICATION NETWORK 105
BUSINESS POTENTIAL LOG 111
SERVICE PLATFORM 113
SERVICE 115a
SERVICE 115n
DATA SEARCH PROVIDER 109a
DATA SEARCH PROVIDER 109m

FIG. 1

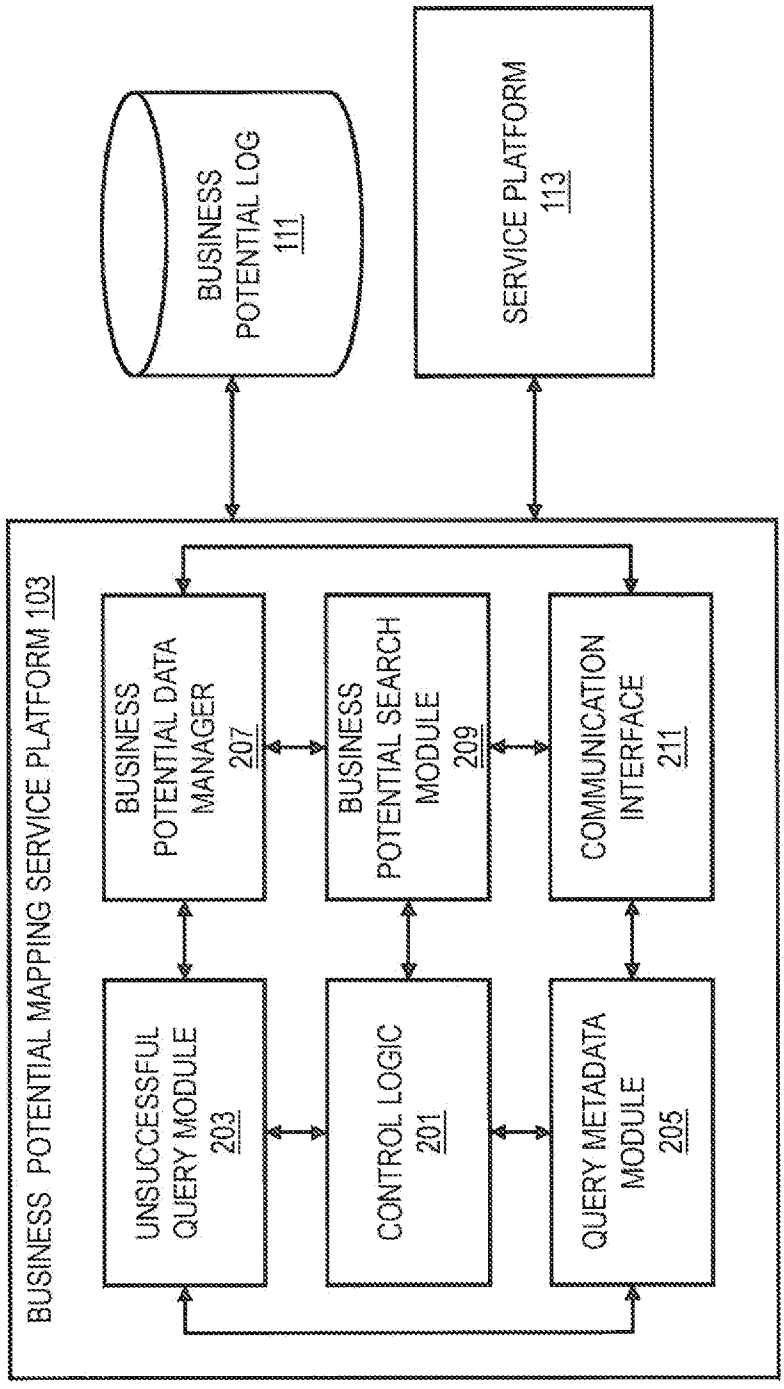

BUSINESS POTENTIAL LOG 111
SERVICE PLATFORM 113
BUSINESS POTENTIAL MAPPING SERVICE PLATFORM 103
BUSINESS POTENTIAL DATA MANAGER 207
BUSINESS POTENTIAL SEARCH MODULE 209
COMMUNICATION INTERFACE 211
UNSUCCESSFUL QUERY MODULE 203
CONTROL LOGIC 201
QUERY METADATA MODULE 205

FIG. 2

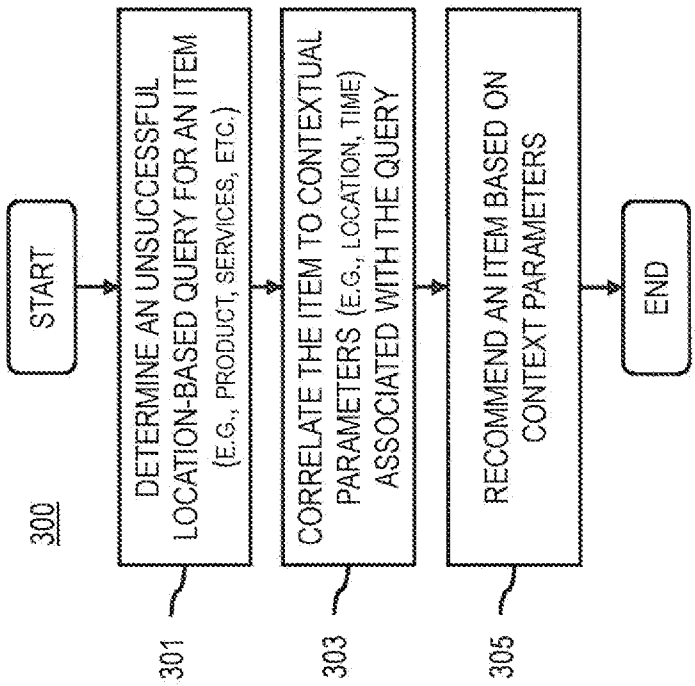

300
START
DETERMINE AN UNSUCCESSFUL LOCATION-BASED QUERY FOR AN ITEM (E.G., PRODUCT, SERVICES, ETC.)
301
CORRELATE THE ITEM TO CONTEXTUAL PARAMETERS (E.G., LOCATION, TIME) ASSOCIATED WITH THE QUERY
303
RECOMMEND AN ITEM BASED ON CONTEXT PARAMETERS
305
END

FIG. 3

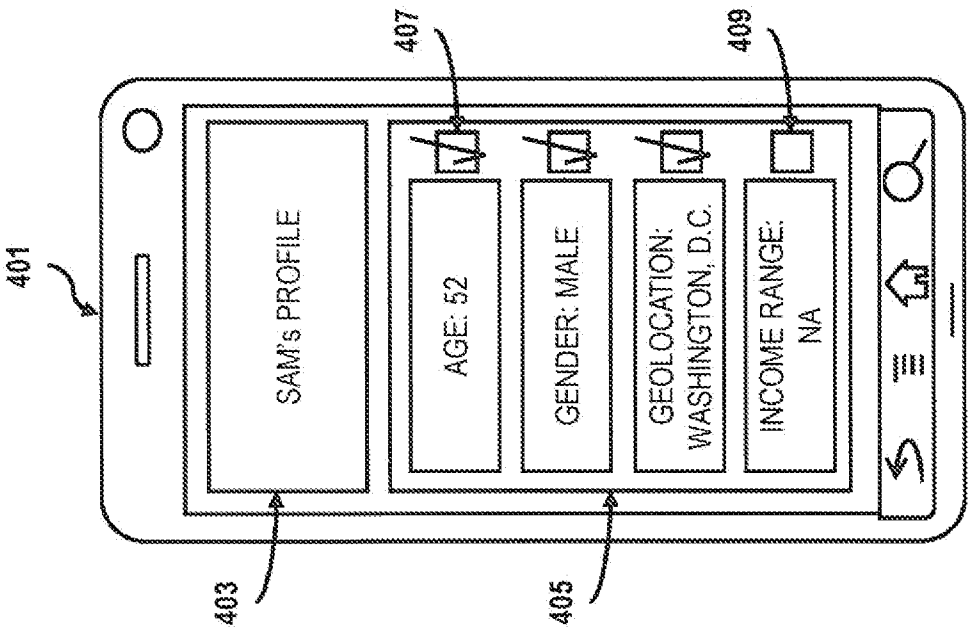

401
403
405
407
409
SAM's PROFILE
AGE: 52
GENDER: MALE
GEOLOCATION: WASHINGTON, D.C.
INCOME RANGE: NA

FIG. 4A

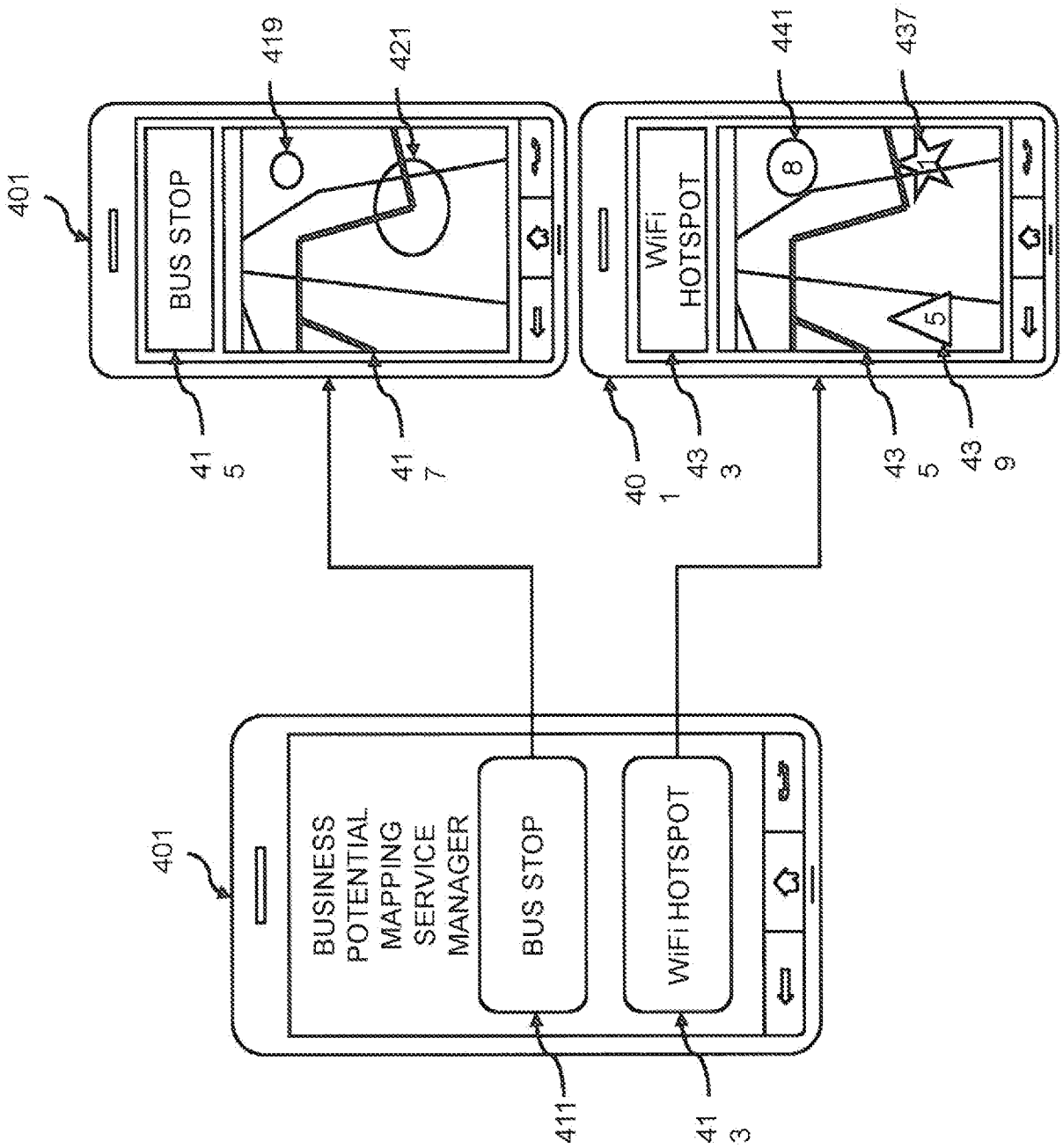

401
BUS STOP
419
421
WiFi HOTSPOT
441
437
8
5
401
BUSINESS POTENTIAL MAPPING SERVICE MANAGER
BUS STOP
WiFi HOTSPOT
411
413
415
417
431
433
435
439

FIG. 4B

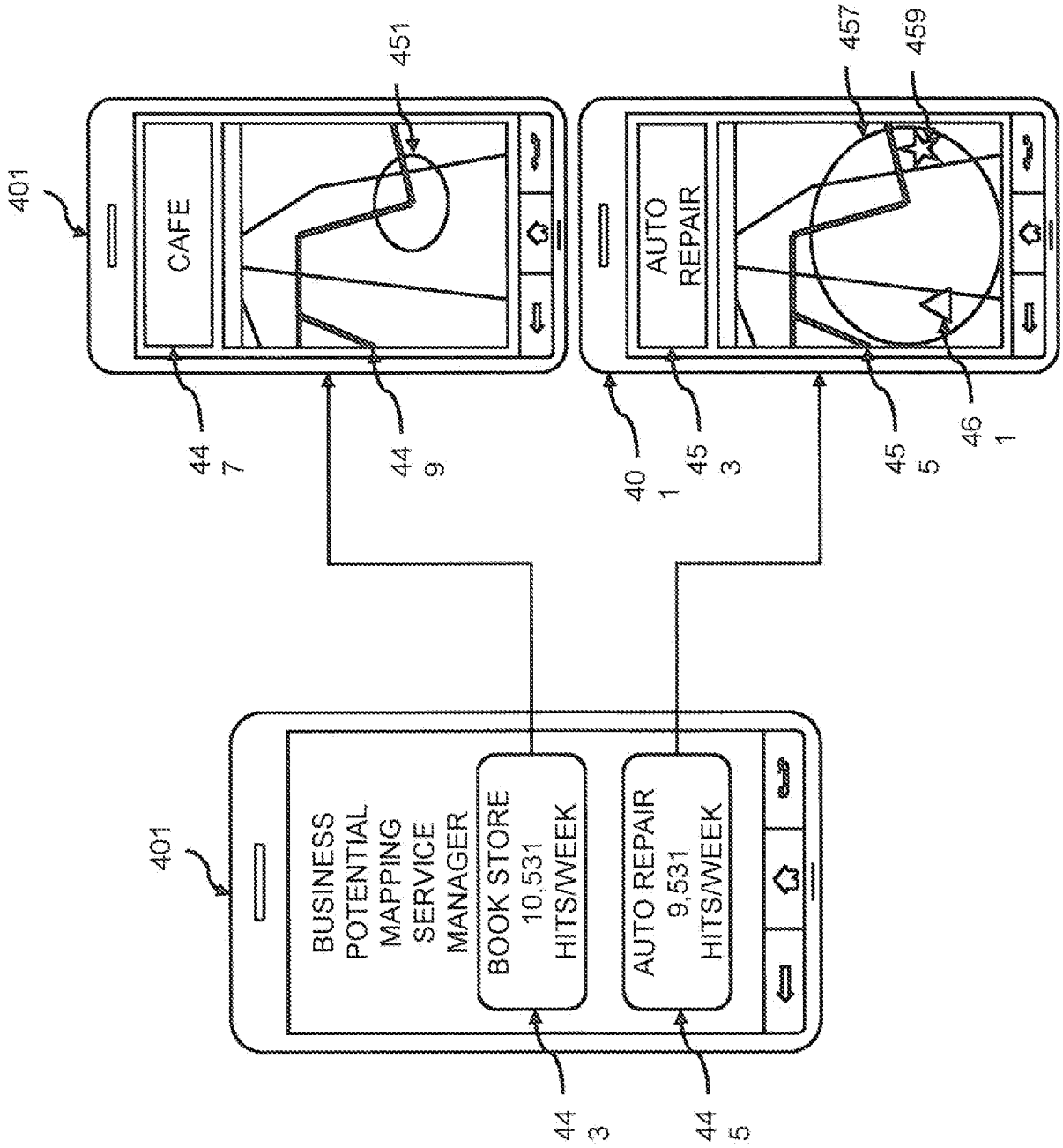

401
BUSINESS POTENTIAL MAPPING SERVICE MANAGER
BOOK STORE 10,531 HITS/WEEK
AUTO REPAIR 9,531 HITS/WEEK
443
445
401
CAFE
451
447
449
401
AUTO REPAIR
457
459
401
401
401

FIG. 4C

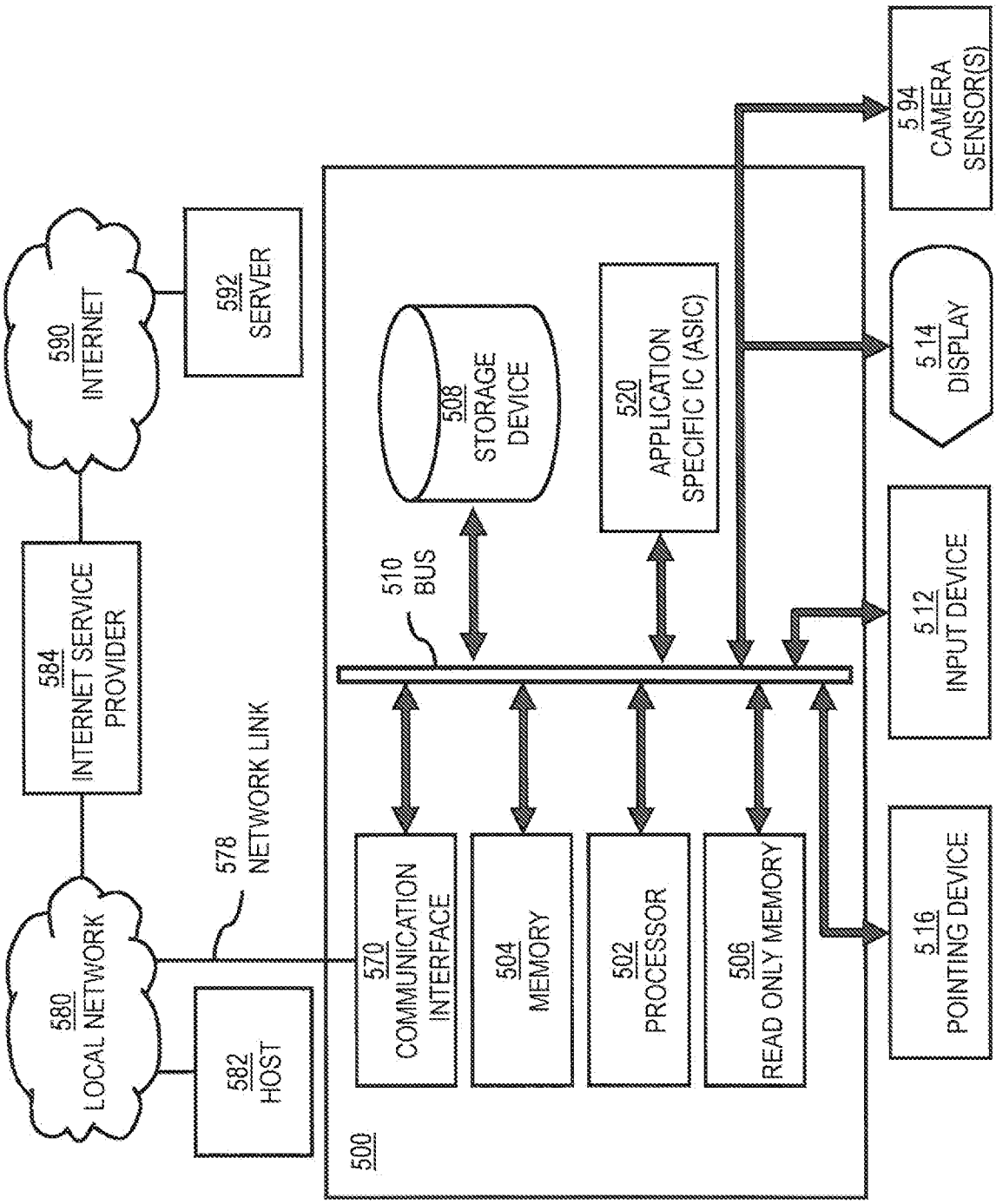

590 INTERNET
592 SERVER
584 INTERNET SERVICE PROVIDER
580 LOCAL NETWORK
582 HOST
578 NETWORK LINK
500
570 COMMUNICATION INTERFACE
504 MEMORY
502 PROCESSOR
506 READ ONLY MEMORY
510 BUS
508 STORAGE DEVICE
520 APPLICATION SPECIFIC IC (ASIC)
594 CAMERA SENSOR(S)
514 DISPLAY
512 INPUT DEVICE
516 POINTING DEVICE

FIG. 5

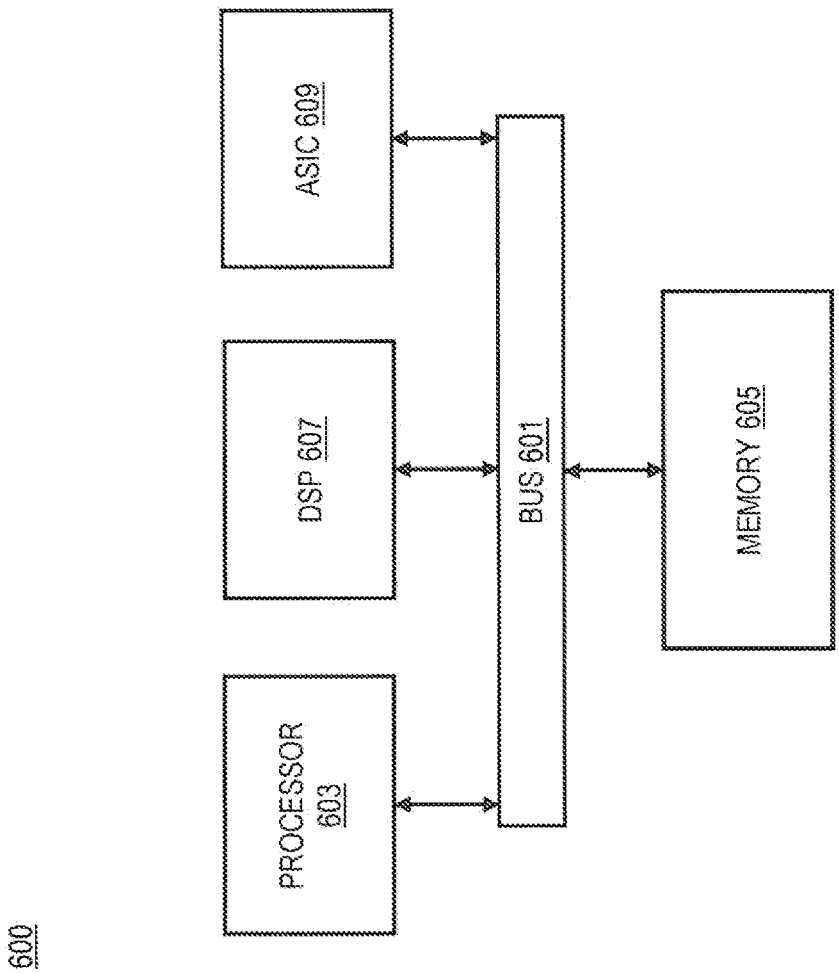
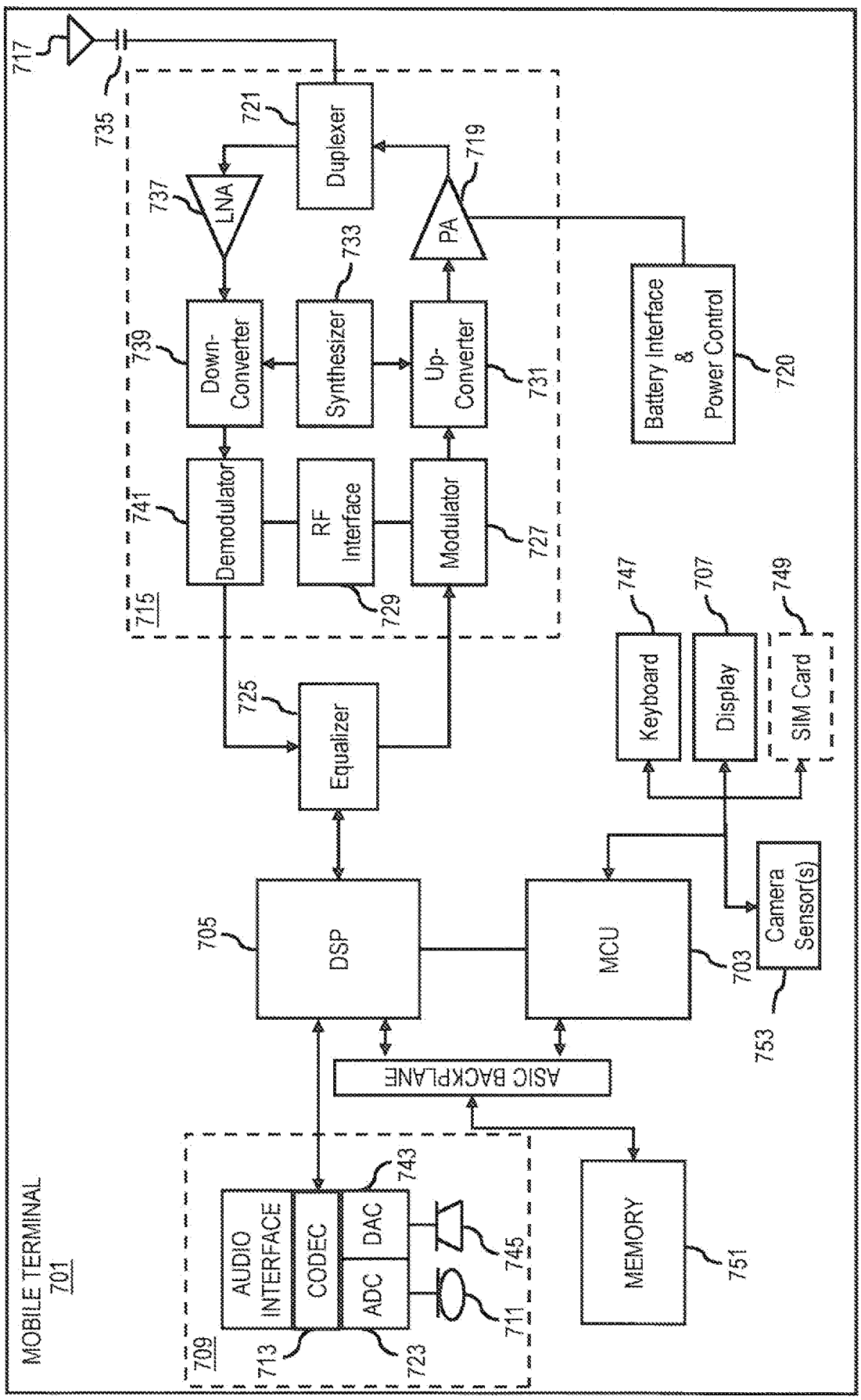


FIG. 6

FIG. 7


MOBILE TERMINAL
701
717
735
721
Duplexer
719
737
LNA
PA
733
739
Down-
Converter
Synthesizer
Up-
Converter
731
Battery Interface
&
Power Control
720
741
Demodulator
RF
Interface
Modulator
727
715
729
747
707
749
Keyboard
Display
SIM Card
725
Equalizer
705
DSP
MCU
703
Camera
Sensor(s)
753
ASIC BACKPLANE
709
AUDIO
INTERFACE
CODEC
DAC
ADC
743
745
711
713
723
MEMORY
751

INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI2013/050261

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: G06F, G06Q, H04W

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

FI, SE, NO, DK

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, NPL databases, IEEE Xplore, Internet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 7516013 B1 (HAMILTON II RICK A [US] et al.) 07 April 2009 (07.04.2009) abstract; figures 1–2; column 1: lines 37–67, column 2: lines 1–7 and 49–65, column 4: lines 8–29	1-28
A	YU et al. 'User Profiles in Location-based Services: Make Humans More Nomadic and Personalized' in Proceedings of the IASTED International Conference on Databases and Applications (DBA'04), Feb. 17–19, 2004 Innsbruck, Austria, ACTA Press, 2004, p. 25-30. whole document	8-9, 18-19

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
31 May 2013 (31.05.2013)	11 June 2013 (11.06.2013)

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI2013/050261

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ZHU et al. 'Anonymizing User Profiles for Personalized Web Search' in Proceedings of the 19th international conference on World wide web Feb (WWW '10), Apr. 26-30, 2010, Raleigh, North Carolina, USA, ACM New York, NY, USA, 2010, p. 1225-1226. DOI:10.1145/1772690.1772886 whole document	8-9, 18-19
A	GHINITA et al. 'PRIVE: Anonymous Location-Based Queries in Distributed Mobile Systems' in Proceedings of the 16th international conference on World wide web Feb (WWW '07), May 8-12, 2007, Banff, AB, Canada, ACM New York, NY, USA, 2007, p. 371-380. DOI:10.1145/1242572.1242623 whole document	8-9, 18-19

INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI2013/050261

CLASSIFICATION OF SUBJECT MATTER

Int.Cl.
G06Q 30/02 (2012.01)
G06F 17/30 (2006.01)
H04W 4/02 (2009.01)
G06F 7/06 (2006.01)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/FI2013/050261

Patent document cited in search report	Publication date	Patent family members(s)	Publication date
US 7516013 B1	07/04/2009	None	